Nutrient Management Plan
for the
Springfield Medical Education Campus
Northern Virginia Community College

Prepared for:

Northern Virginia Community College
Facilities Planning Division, Rm. 314B
8333 Little River Turnpike
Annandale, VA 22003

Prepared By:
Paul W. Leeger/Certified Nutrient Management Planner
Certification No. 830

EEE Consulting, Inc.
8525 Bell Creek Road
Mechanicsville, VA 23116

Location Information	
Physical Address	*6699 Springfield Center Dr.*
City State Zip	*Springfield, VA 22150*
Coordinates	*+38 45' 48.84"*
NAD 83 Deg Min Sec	*-77 10' 35.50"*
VAHU6 Watershed Code	*PL30 – Accotink Creek*
County	*Fairfax, VA*

Square Footage of Management Areas	
Total	*Total: 1.61 acres (69,990 ft^2)*
Area 1	*1.61 acres (69,990 ft^2)*

Plan Start Date	*July 15, 2018*
Plan End Date	*July 15, 2021*

Planner Signature	

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1.0 INTRODUCTION AND SITE DESCRIPTION

1.1 Introduction

This Nutrient Management Plan (NMP) is for the Springfield Medical Education Campus (MEC) of the Northern Virginia Community College (NOVA) located east of I-95 near Springfield, in Fairfax County, Virginia (Figure1).

This NMP addresses only the nutrient management of turfgrass. Management of other vegetated areas containing trees, flowering ornamentals, small shrubs and groundcovers, is performed by each facility and their landscape contractor based on very site specific conditions including but not limited to the type and status of vegetated areas, annual soil testing, and the occurrence of pests and weeds. This NMP is effective for three years (until July 15, 2021) or until major renovation or other changes to maintenance practices occur. This NMP should be used as a resource for planning the quantity and timing of turfgrass nutrient application based on sound agronomic practices.

1.2 Site Description

The 5-acre Medical Education Campus contains a large turfgrass area in the front of the building, facing Springfield Center Drive. There are also turf areas around the sides of the building and along the parking garage and entrance drive. All turf areas have been seeded with a tall fescue blend (mix of fine leaved tall fescue and Kentucky bluegrass) and are therefore categorized as cool season turf.

In general, turf conditions are very good. Most turf west of the Medical Education Garage is irrigated. The remaining turf is not irrigated.

There are no Environmentally Sensitive Areas located on the Medical Education Campus.

1.3 Current and Future Turf Maintenance

All turf maintenance is performed by NOVA's landscaping contractor including mowing, herbicide, fertilizer and lime applications, as well as aeration and overseeding.

A landscaping maintenance contractor will be performing most turf management including all nutrient applications. It will be the responsibility of the Landscape Supervisor and the campus Facility Manager to ensure the nutrient management plan is followed.

2.0 SOIL SAMPLING AND ANALYSIS

Most of the soils in the turf areas have been heavily modified and are considered Urban Land in the U.S. Department of Agriculture (USDA) soil survey. Soils generally consist of a sandy loam texture.

A soil sample was collected on February 14, 2018 from the turfgrass at the MEC Campus and submitted for laboratory analysis including pH, buffer pH, phosphorus and potassium, and other soil properties. Figure 2 shows the soil sampling area and Table 1 presents the laboratory results. Appendix A presents the soil laboratory data. No sampling was performed within wooded or landscaped areas.

Soil laboratory results were converted into nutrient management ratings based on the Virginia Nutrient Management Standards and Criteria (VNMS&C). The soil phosphorous level rated L-, and the potassium concentration rated M+. Soil pH was neutral, above the target level of 6.2, at 7.1 Standard Units (SU). The soil laboratory report is presented in Appendix A.

3.0 NUTRIENT MANAGEMENT AREAS

The entire 1.61-acres of turf at the Medical Education Campus is in one Nutrient Management Area. Figure 3 shows the nutrient management area. Table 2 presents the application schedule for the nutrient management, discussed in greater detail in Section 3.1 below.

3.1 Nutrient and Liming Applications

3.1.1 Nitrogen, Phosphorous and Potassium

Nitrogen, phosphorous (P2O5) and potassium (K2O) are the three macronutrients essential for healthy turf and, along with lime applications, are the central focus of the NMP. Phosphorous and potassium recommendations are based on the soil laboratory results. Nitrogen recommendations are based on the turfgrass needs, not soil test results, which vary based on the type of turfgrass (cool vs. warm season) and level of management (standard vs. intensive). Recommended rates and timing of all three macronutrients is based on the VNMS&C.

The acceptable window for nitrogen application for cool season fescue turf at the Medical Education Campus is from February 27 until December 6. Although aggressive spring and summer nitrogen fertilization can result in lush, dark green foliage, this occurs at the expense of the turf's root system. Turf with an inadequate root system will then struggle in the summer heat and moisture conditions. Additionally, too much nitrogen in spring and summer for cool season turf can result in leaching or runoff to nearby waterbodies. For these reasons, only 0.5 pound of slow release nitrogen is recommended during May to June to provide a sustained growth response without a flush in shoot growth at the expense of the roots. The bulk of nitrogen should be applied

in monthly increments from September through November.

As phosphorous and potassium are not as mobile as nitrogen and generally reside in soil for longer periods of time, the application timing of these two macronutrients is not as critical as nitrogen. Incremental applications of these nutrients from September to November are recommended.

3.1.2 Lime and pH

Soil acidity is critical to plants because it affects the availability of nutrients in the soil and potential leaching of nutrients from the soil. Cool season fescue prefers a soil pH that is slightly acidic, at a level of approximately 6.2 Standard Units (SU). Periodic lime applications are necessary for many Virginia soils to correct low pH, add buffering capacity, to provide secondary nutrients calcium and magnesium as well as some micronutrients. Liming rates are based on soil test pH and buffer indices. Based on the 2018 soil samples, no lime applications are recommended for the first year of this NMP (see Table 2).

Liming recommendations are for the first year following soil sampling only. The soil should be tested for soil pH and Buffer pH in the late fall to winter each year to determine if additional annual liming is necessary.

3.2 Selection of Fertilizers

Specific fertilizers and herbicides have not been selected as a part of this NMP in order to provide greater flexibility and cost savings. The landscape contractor has the option to select either commonly used fertilizer blends that they may already have in stock or are readily available, or they can use custom blends, a common practice in the commercial landscaping industry. Slow release nitrogen containing fertilizers are recommended. This NMP will require revision should the landscape contractor and the campus Facility Manager decide to use animal manures or Class B biosolids (not of exceptional quality).

Provided that the maximum rate of nitrogen per application and the total annual rates of all three nutrients are not exceeded as detailed in Table 2, the landscape contractor may use their discretion with the exact ratio of nutrients applied per application.

3.3 Pre- and Post-Emergent Herbicides

Weed control is a necessary requirement for healthy turf and has been implemented in the past at the Medical Education Campus. In the previous NMP period, pre and post emergent herbicides containing nitrogen fertilizers were applied in spring and early summer months for the campus grounds. As presented in Section 3.1.1, only one application of slow release nitrogen is recommended in the late spring. Therefore, additional straight application of herbicides without nitrogen additives may be required. The Virginia Cooperative Extension (VCE) Publication 430-

532 (http://pubs.ext.vt.edu/430/430-532/430-532_pdf.pdf) presents a more detailed discussion of pre and post emergent herbicides for cool season turf.

3.4 Precautions for Fertilizer Applications

General precautions for fertilizer application include:

- Try to avoid applying fertilizers on steep slopes 48-hours prior to a rain event.
- Do not apply fertilizers to frozen or snow covered ground, nor should they ever be used as ice melt.
- Avoid/minimize application of fertilizers to impervious areas such as parking lots, roads, and sidewalks, and within 25 feet of environmentally sensitive areas and stormwater collection/management facilities.
- Remove any granular materials that land on impervious surfaces by sweeping and collecting, and either put the collected material back in the bag, or spread it onto the turf.

4.0 ENVIRONMENTALLY SENSITIVE AREAS AND RECOMMENDED BUFFERS

No environmentally sensitive areas occur on the Springfield Campus; however, two underground sand filters are located on the Campus. These stormwater management facilities are identified on Figures 2 and 3.

5.0 OTHER TURF MANAGEMENT CONSIDERATIONS

Aeration - Extensive core cultivation/aeration in the late summer to early fall is recommended for the Medical Education campus. Core aeration is very disruptive to surface smoothness, but it is the best way to relieve the physical effects of soil compaction and increase soil oxygen levels.

Grass Seed Type – VCE 2014-2015 - Virginia Turfgrass Variety Recommendations https://www.sites.ext.vt.edu/newsletter-archive/turfgrass/index.html - (most recent year) should be referenced when selecting seed mix for over-seeding. The type should be suitable to environmental conditions of the Northern Virginia Transition zone. A general recommendation for the Medical Education Campus is 90% Tall Fescue possibly blended with 10% Kentucky Bluegrass for turf in primarily sunny locations. Fine fescue blends may be more appropriate for shadier turf areas.

Iron - Iron applications (particularly foliar applications) may periodically be used for enhanced greening as an alternative to nitrogen. These applications are most beneficial if applied in late spring through summer for cool season grasses and in late summer/fall applications for warm-season grasses. Since iron is a micronutrient, its application levels are very low. The color response is short-lived (typically two to three weeks) because the iron-induced color response in the leaves is removed by mowing.

Returning and Management of Grass Clippings - The recycling of grass clippings on turf should be encouraged as an effective means of recycling nitrogen, phosphorus, and potassium. Where aesthetics allow, all clippings from mowing events should be returned to the turf rather than discharging them onto sidewalks or streets. Clippings should not be blown onto impervious surfaces or surface waters, dumped down stormwater drains, or piled outside where rainwater will leach out the nutrients creating the potential for nutrient loss to the environment

Spreader Equipment Calibration - Spreader equipment calibration is critical to NMP implementation. The landscape contractor should supply equipment calibration records to the campus Facility Manager on a routine basis.

6.0 RECORDKEEPING

Proper NMP implementation requires diligent record keeping of fertilizer, lime and herbicide applications, and turfgrass conditions. Important information to retain with the plan includes soil tests reports; spreader settings; calibration results, dates of fertilizer application and rates applied; seeding or renovation; and unusual stresses caused by disease, drought, and pests. This information will also provide the background needed for future plan revisions.

7.0 REFERENCES

Nutrient Management Training and Certification Regulations 4VAC50-85 (effective date November 23, 2014)

Virginia Nutrient Management Standards and Criteria (Revised July 2014): http://www.dcr.virginia.gov/documents/StandardsandCriteria.pdf

Spring and Summer Lawn Management Considerations for Cool-Season Turfgrasses 430-532: http://pubs.ext.vt.edu/430/430-532/430-532_pdf.pdf

Winter Management and Recovery Tips to Optimize Athletic Field Safety and Performance for Spring Sports, VCE Publication 430-408: (http://pubs.ext.vt.edu/430/430-408/430-408_pdf.pdf)

Virginia Cooperative Extension Publication 2014-2015 - Virginia Turfgrass Variety Recommendations http://pubs.ext.vt.edu/CSES/CSES-17/CSES-17_pdf.pdf

TABLES

Table 1 - Soil Test Summaries

Site:	Medical Springfield Campus - NOVA
Testing Lab:	Waypoint Analytical (Formerly A&L Eastern Laboratories)
Sample Date:	02/14/2018

Soil Sampling Area ID	Square Feet	Soil pH	Buffer pH	P (Mehlich I) ppm	P - VT (H/M/L)	K (Mehlich I) ppm	K - VT (H/M/L)	Soil description	Turf Species
M-1	69,990	7.1	DNC*	1	L-	87	M+	Dark brown, sandy loam	Cool season, fescue

Notes: SU = Standard Units; ppm = parts per million; P and K ratings are from Virginia Nutrient Management Standards & Criteria.
DNC* = Buffer pH did not compute because the pH was above 6.2, according to Waypoint Analytical personnel.

Table 2 – Nutrient Application Worksheet

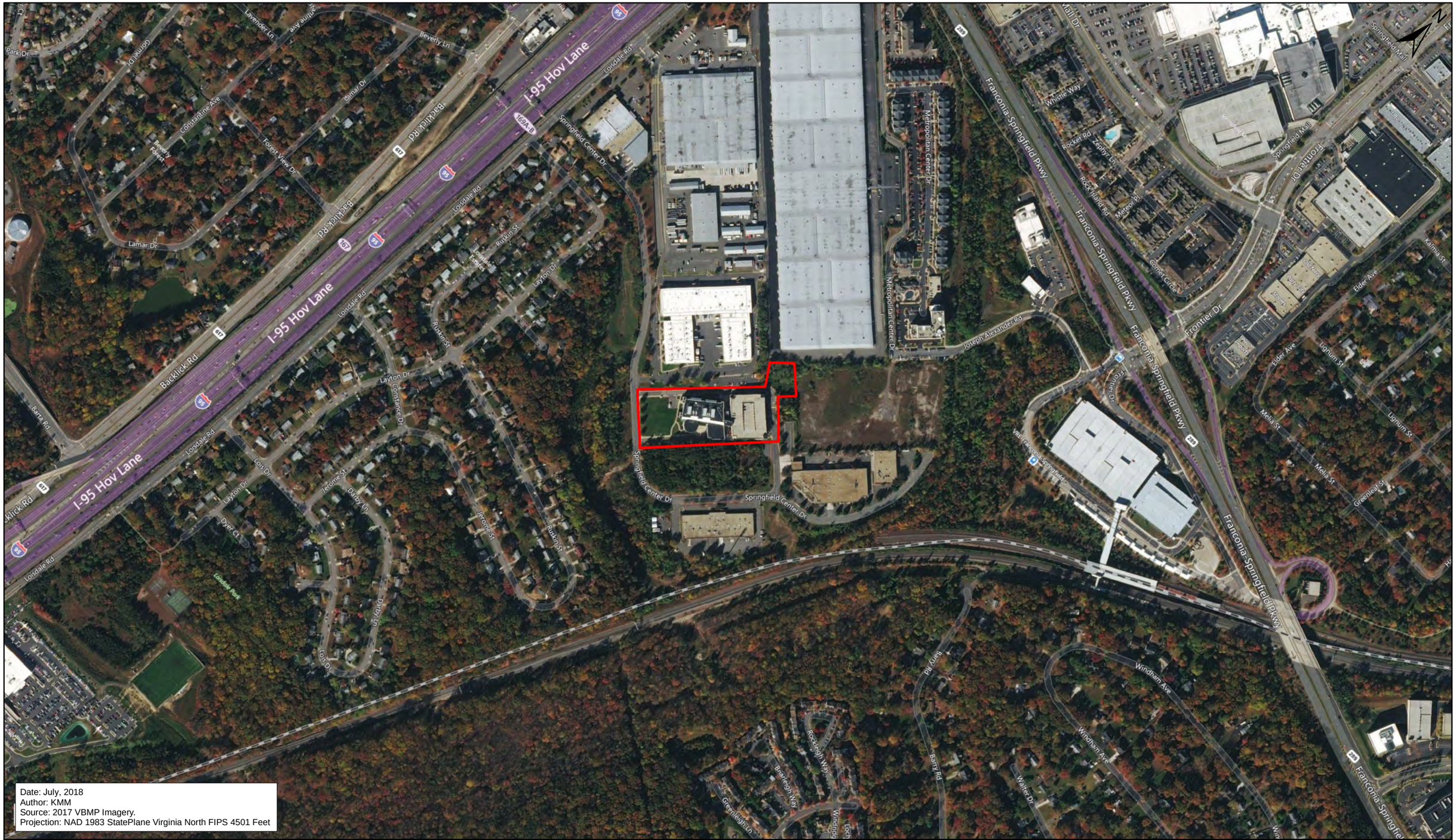
Site: **Medical Education Campus – NOVA**
Begins: **7/15/2018** Expires: **7/15/2021**
Nutrient Management Area: **1 - Campus**
Square Feet: **69,990**
Landscape Plants: **Cool Season Turf (Fescue)**

Annual Nutrient Needs (lbs/1000 ft^2)[1]	Application Month/Day[1,2]	Amendment Material Notes	% Slow Release N	Total N	Total P205 (lbs/1000 ft^2)	Total K20 ((lbs/1000 ft^2)	Lime Recommendation (lbs/1000 ft^2)[3]
2.8*-1.5*-0.75*	April 15-June 15	N - Fertilize	50% or greater	0.5	0	0	0
	Sept 1	Aerate, Overseed & Fertilize	50% or greater	0.9	0.5	0.25	
	Oct 1	Fertilize	50% or greater	0.9	0.5	0.25	
	Nov 1	Fertilize	50% or greater	0.5	0.5	0.25	
	Totals:			**2.8**	**1.5**	**0.75**	

Notes:
*Up to 3.5 lbs of nitrogen, 3 lbs of phosphorous, and 1 lb of potassium per 1000 ft^2 is allowed for this NMA per the VNMS&C, but the amount of these nutrients recommended in this plan is reduced due to the excellent very good condition of turfgrass at the Campus.
1. Fertilizer recommendations are flexible if the following conditions are met: a) no more than 0.7 pounds of Water Soluble N per 1000 ft^2 is applied within a 30-day period; b) no more than 0.9 pounds of Total N (per 1000 ft^2) may be applied within a 30-day period; c) no more than 0.5 pounds of N per 1000 ft^2 is applied for the April 15-May 15 and the November applications; and d) Total annual fertilizer amounts for each nutrient should not exceed the Annual Nutrient Needs listed in column 1.
2. The month and day designations are a general guideline. Apply as close to the month as possible, using the day designation to determine the interval between applications.
3. Based on the soil sample laboratory results, no lime applications are needed for the first year of this NMP. Liming for successive years should be based on additional soil pH and buffer pH testing.
4. Do not apply inorganic fertilizers on frozen or snow-covered ground, or on denuded areas. Any fertilizer that makes its way onto impervious surfaces should be swept or blown back into pervious turfgrass – covered areas. Do not use fertilizers as ice melt.
5. Use a drop spreader for application of inorganic fertilizers on turf areas less than 10 feet wide or on slopes greater than 2%.
6. Apply pre and or post emergent herbicides as needed, but do not use fertilizer containing herbicide prior to April 15th and conditions must be met in Note 1.

FIGURES

Figure 1: Medical Education Campus–Project Location



Date: July, 2018
Author: KMM
Source: 2017 VBMP Imagery.
Projection: NAD 1983 StatePlane Virginia North FIPS 4501 Feet

3e EEE Consulting, Inc.
Environmental, Engineering and Educational Solutions

Springfield Medical Education Center
Figure 1: Project Location
NVCC NMP

0 500 1,000 Feet

Figure 2: Medical Education Campus-Soil Sampling Areas

Northern Virginia Community College (NVCC)

Soil Sampling Areas

MEC-1

Medical Education Campus

Medical Education Garage

Date: July, 2018
Author: KMM
Source: 2017 VBMP Imagery.
Projection: NAD 1983 StatePlane Virginia North FIPS 4501 Feet

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Figure 2: Springfield Medical Education Campus
Soil Sampling Areas
NVCC NMP

0 75 150 Feet

Figure 3: Medical Education Campus-Nutrient Management Areas

Northern Virginia Community College (NVCC)

Nutrient Management Areas

Area 1

Medical Education Campus

Medical Education Garage

Date: July, 2018
Author: KMM
Source: 2017 VBMP Imagery.
Projection: NAD 1983 StatePlane Virginia North FIPS 4501 Feet

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Figure 3: Springfield Medical Education Campus
Nutrient Management Areas
NVCC NMP

0 75 150 Feet

APPENDICES

Appendix A

Laboratory Soil Test Results

Report Number: 18-046-0751
Account Number: 78934

Waypoint ANALYTICAL
7621 Whitepine Road, Richmond, VA 23237
Main 804-743-9401 ° Fax 804-271-6446
www.waypointanalytical.com

"Every acre...Every year."™

Send To: EEE Consulting Inc
201 Church Street
Suite C
Blacksburg VA 24060

Grower: NVCC Medical Education Center

SOIL ANALYSIS REPORT

Analytical Method(s): SMP Buffer pH Mehlich 3 Loss On Ignition Water pH

Date Received: 02/15/2018 **Date Of Analysis:** 02/16/2018 **Date Of Report:** 02/16/2018

Sample ID / Field ID	Lab Number	OM	W/V	ENR	Phosphorus			Potassium	Magnesium	Calcium	Sodium	pH		Acidity	C.E.C
		% Rate	Soil Class	lbs/A	M3 ppm Rate	ppm Rate	ppm Rate	K ppm Rate	Mg ppm Rate	Ca ppm Rate	Na ppm Rate	Soil pH	Buffer Index	H meq/100g	meq/100g
MEC-1	07531	3.0 M		97	9 VL			122 M	302 VH	1299 M		7.1		0.0	9.3

Sample ID / Field ID	Percent Base Saturation					Nitrate	Sulfur	Zinc	Manganese	Iron	Copper	Boron	Soluble Salts		
	K %	Mg %	Ca %	Na %	H %	NO_3 N ppm Rate	S ppm Rate	Zn ppm Rate	Mn ppm Rate	Fe ppm Rate	Cu ppm Rate	B ppm Rate	SS ms/cm Rate		
MEC-1	3.4	27.1	69.8		0.0										

Values on this report represent the plant available nutrients in the soil. Rating after each value: VL (Very Low), L (Low), M (Medium), H (High), VH (Very High). ENR - Estimated Nitrogen Release. C.E.C. - Cation Exchange Capacity.

Explanation of symbols: % (percent), ppm (parts per million), lbs/A (pounds per acre), ms/cm (milli-mhos per centimeter), meq/100g (milli-equivalent per 100 grams). Conversions: ppm x 2 = lbs/A, Soluble Salts ms/cm x 640 = ppm.

This report applies to sample(s) tested. Samples are retained a maximum of thirty days after testing.

Analysis prepared by: Waypoint Analytical Virginia, Inc.

by: Pauric McGroary

Pauric McGroary

Date Received: 02/15/2018
Date Of Report: 02/16/2018

SOIL FERTILITY RECOMMENDATIONS

Sample ID / Field ID	Intended Crop	Yield Goal	Lime Tons/A	Nitrogen N lb/A	Phosphate P_2O_5 lb/A	Potash K_2O lb/A	Magnesium Mg lb/A	Sulfur S lb/A	Zinc Zn lb/A	Manganese Mn lb/A	Iron Fe lb/A	Copper Cu lb/A	Boron B lb/A
MEC-1	Lawn	0	0.0	3.5	4.0	1.0	0						

Comments:

"The recommendations are based on research data and experience, but NO GUARANTEE or WARRANTY expressed or implied, concerning crop performance is made."

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